UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/524,145	02/11/2005	Volker Hennige	264624US0XPCT	2408

22850 7590 05/30/2008

OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER	
BEST, ZACHARY P	

ART UNIT	PAPER NUMBER
1795	

NOTIFICATION DATE	DELIVERY MODE
05/30/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com
oblonpat@oblon.com
jgardner@oblon.com

Office Action Summary	Application No.	Applicant(s)	
	10/524,145	HENNIGE ET AL.	
	Examiner	Art Unit	
	Zachary Best	4191	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 May 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10,24 and 25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10,24 and 25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 February 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *02112005, 03242005, 06212005, 05162006, 06042007, 04162008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

ELECTRICAL SEPARATOR COMPRISING A SHUT-DOWN MECHANISM, METHOD FOR THE PRODUCTION THEREOF AND ITS USE IN LITHIUM BATTERIES

Examiner: Z. Best S.N. 10/524,145 Art Unit: 4191 May 23, 2008

Election/Restrictions

1. Election of Group I, Claims 1-10 and 24-25, without traverse, has been received from Applicant on May 7, 2008. Claims 11-23 have been cancelled.

Specification

2. The abstract of the disclosure is objected to because the length exceeds 150 words. Correction is required. See MPEP § 608.01(b).

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Objections

4. Claim 4 is objected to because it does not identify the carrier's element. For purposes of compact prosecution, Examiner has read Claim 4 as "carrier is polymeric and nonwoven."

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 1-25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding Claim 1, the term "predetermined" is indefinite as the claim does not further define how the temperature is predetermined. *See Seagram and Sons, Inc. v. Mazall*, 84 USPQ 180 (CACD 1950).

Regarding Claim 2, the term "flexible" is a relative term which renders the claim indefinite. The term "flexible" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1-8, 10, and 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bauer et al. (US 6,632,561 B1) in view of Hying et al. (WO 99/62620). Subsequent references to Hying et al. are made based on corresponding US 6,620,320 B1.

Regarding Claim 1, Bauer et al. teach a lithium battery separator having a shutdown function, and comprising a porous carrier (col. 26, lines 25-50) wherein a shutdown layer of shutdown particles, which melt at a temperature and close the pores of said inorganic layer (col. 2, lines 25-49) present on said carrier and bonded thereto (col. 25, line 65 – col. 26, line 24). However, Bauer et al. fail to teach said porous carrier comprises a porous inorganic, nonelectroconductive coating layer on and in said carrier.

Hying et al. teach an ion-conducting composite that may be used in electrochemical apparatus (col. 1, lines 8-19) comprising a porous carrier having a porous inorganic nonelectroconductive coating on and in said carrier (Hying et al. claim 22). It is advantageous to coat the porous carrier with the ion-conducting composite because it improves relation to acids and has improved high temperature resistance (abstract and col. 1, lines 42-45). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to create the lithium battery separator of Bauer et al. with a porous inorganic nonelectroconductive coating on and in said carrier because Hying et al. teach that coating the porous carrier with said coating improves relation to acids and high temperature resistance.

Regarding Claims 2 and 6, Bauer et al. suggest the carrier is less than 30 μm in thickness (col. 29, lines 1-4).

Regarding Claims 3-5, Bauer et al. teach the carrier is polymeric and nonwoven and the material of said carrier is fibers of polyester or polyolefin (col. 26, lines 44-46).

Regarding Claim 7, Hying et al. teach the use of Alcoa CT3000SG alumina particles, which has a mean particle size of 0.7 μm as evidenced by Trübenbach et al. (US 5,935,897, Table 2).

Regarding Claim 8, Bauer et al. teach the particle size is 5 nm to 20 μm (col. 3, lines 57-67, and Hying et al. teach the coated carrier has a pore width of 1 nm to 5 μm (col. 9, lines 24-30).

Regarding Claim 10, Bauer et al. teach the shutdown particles are polymers or polymer blends (col. 2, lines 53-67).

Regarding Claim 24, Bauer et al. teach a process of preparing a battery comprising inserting the said separator into a battery cell (col. 28, line 46 - col. 29, line 15).

Regarding Claim 25, Bauer et al. teach a battery comprising said separator and one or more additional components (col. 28, line 46 – col. 29, line 15).

9. Claim 9 is rejected are rejected under 35 U.S.C. 103(a) as being unpatentable over Bauer et al. in view of Hying et al., as applied to Claims 1-8, 10, and 24-25, and further in view of Treger (US 5,091,272 A)

Bauer et al. and Hying et al. teach the lithium battery separator as recited in Paragraph 8. However, Bauer et al. and Hying et al. fail to specifically teach the layer of shutdown particles has a thickness, which is approximately in the range from said average size of said shutdown particles up to 10 times said average size.

Treger teaches a separator with a shutdown layer for use in electrochemical cells (abstract), wherein the layer of shutdown particles is approximately 4 times greater than the average particle size of said particles (col. 5, line 56 – col. 6, line 10). It is advantageous to have this thickness because the close packed structure has a high packing density and provides more rapid shut down of the layer (col. 3, lines 48-63). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to create the lithium battery separator of Bauer et al. and Hying et al. wherein the thickness of the layer of shutdown particles is approximately 4 times greater than the average size of said shutdown particles because Treger teaches the structure will be closely packed and provide for a more rapid shut down of the separator.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zachary Best whose telephone number is (571) 270-3963. The examiner can normally be reached on Monday to Thursday, 7:30 - 5:00 (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-Wei Yuan can be reached on (571) 272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

zpb

/Dah-Wei D. Yuan/
Supervisory Patent Examiner, Art Unit 1795